

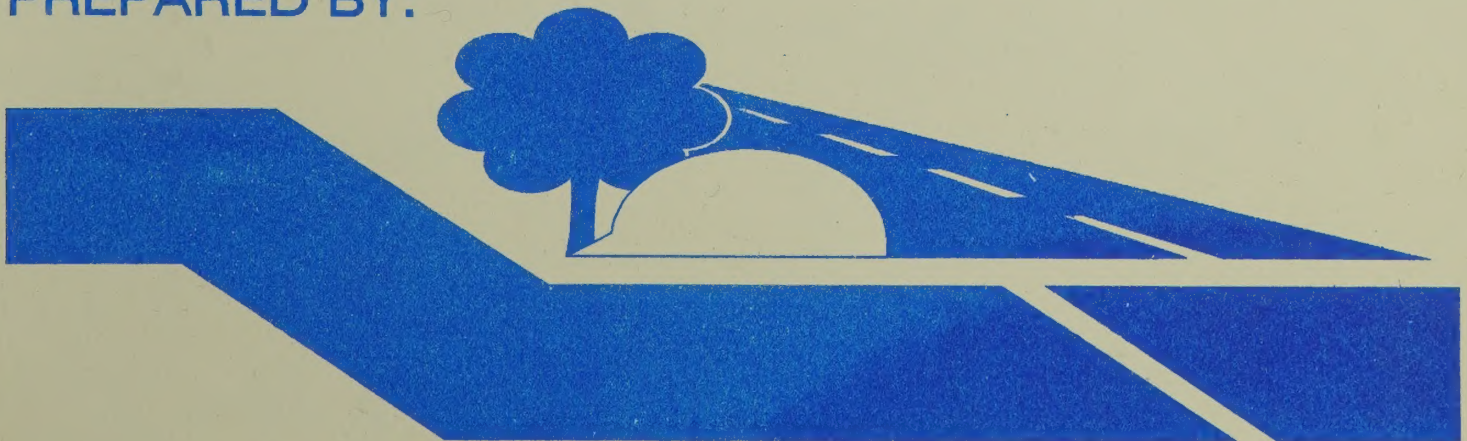
URBAN
MUNICIPAL

CAY ON HBL 416
H18
1998



1998 HAMILTON-WENTWORTH COLLISION REPORT

PREPARED BY:



TRANSPORTATION,
OPERATIONS
AND ENVIRONMENT

1998 Hamilton-Wentworth Collision Report

Prepared By:

The Transportation, Operations and Environment Division

Project Manager:

H.L. Solomon, P. Eng.

ACKNOWLEDGEMENTS

The Project Staff wish to express their appreciation to the members of the Roads and Planning Departments of the City of Hamilton and the Regional Municipality of Hamilton-Wentworth, the Regional Police Department, the Ontario Provincial Police (Burlington Detachment) and the Ministry of Transportation of Ontario for their co-operation and assistance in the preparation of this report.

The Project Staff was comprised of Ms. Linda Juchniewicz, Mr. H. Solomon, and Mr. Rob Galloway of the Traffic Division, Public Works and Traffic Department. The Department wishes to thank the staff of the Services Division of the Clerk's Department for their assistance in the printing of the report.

1998 HAMILTON-WENTWORTH COLLISION REPORT - VOLUME 1

Introduction

The annual report is a summary of factors associated with traffic collisions that occurred in the Regional Municipality of Hamilton-Wentworth. The latest report contains the summary of data specific to 1998. The report contains overall frequencies and trends, plus location-specific data. This type of information is produced annually. A companion report with more general data about drivers, pedestrians and environment is based on a three year average. The companion report was last produced in 1996 and will be produced again in 1999.

The Regional Municipality of Hamilton-Wentworth is situated in southern Ontario at the westerly end of Lake Ontario. The following municipalities are located within the Region: the Town of Ancaster; the Town of Dundas; the Town of Flamborough; the Township of Glanbrook; the City of Hamilton and the City of Stoney Creek. The estimated total population of these combined localities was 467,799 in 1996.

Traffic collisions are a primary cause of accidental deaths, injuries and associated property losses. The intention of this report is to provide factual information to those agencies and persons concerned with the safety of the roadway transportation system within the Regional Municipality of Hamilton-Wentworth.

Traffic collisions frequently involve complex interactions between human behaviour, vehicle characteristics and environmental conditions. The factor or factors responsible for causing a collision are not always the most obvious nor are they always readily apparent. Caution should be exercised in drawing conclusions from the statistics presented in this report and conclusions should be drawn only with appropriate qualifications and supportive information.

The information presented in this report is based primarily upon motor vehicle collisions investigated by the Hamilton-Wentworth Regional Police. Citizen – reported collisions are not included in the statistics. The geographic area includes all roads in Hamilton-Wentworth, excluding

collisions occurring on the Queen Elizabeth Way and Highway 403 and on-ramps and off-ramps to those highways. Collisions occurring on service roads to the Queen Elizabeth Way are included.

From April, 1997 through to January, 1998, 93.0 km of roadway was transferred to the Region of Hamilton-Wentworth from the Province of Ontario. For consistency, the statistics in this report are calculated as if all of the transferred roads were under the Region on January 1, 1997. The effect of the added length of road on collisions is explained later in the report.

1998 COMPARED WITH PREVIOUS YEARS

1. Overall Collisions

586 fewer collisions were reported in 1998 than in 1997, an decrease of 9%. The total number of collisions reported in 1998 was the lowest in the past 3 decades. The decrease occurred despite the fact that, over the course of 1997-1998, the Province transferred approximately 93.0 km of road to Hamilton-Wentworth. When comparing 1995-1998 to previous years, one should consider the fact that a citizen's report form was introduced in 1994 to record collisions below the normal injury qualifications or minimal property damage limits. It has been noted by the Hamilton-Wentworth Regional Police Department that an undetermined number of reportable collisions are being recorded on the citizen's report form, thereby possibly lowering the true number of reportable collisions. However, these are primarily property damage collisions and this should not materially affect the number of injury collision reports.

The occurrence of injury collisions also decreased from 1997, by 76 injury collisions, a 3.8% reduction. The number of fatal collisions in 1998 was 17, a 60% decrease over 1997.

2. Bicycle Injuries

The number of people injured in motor vehicle collisions while riding on a bicycle increased by 37 from 1997 to 1998. There were 4 cyclist fatalities in 1998.

3. Pedestrian Fatalities

In 1998 there were 5 pedestrian fatalities, 6 less than 1997.

4. Alcohol Involvement

Alcohol involvement in motor vehicle collisions has been, on average, steadily decreasing since 1978. In the years 1990 to present, alcohol involvement in collisions averaged 5.6 percent, compared to 9.1 percent for the previous 10 years. The rate was 4.9 percent in 1998, a slight decrease over 1997. The involvement of young drivers (under 21) who had been drinking decreased by 3% over 1997.

SUMMARY

- * In 1998, 5,111 reported traffic collisions occurred on municipal roadways in the Regional Municipality of Hamilton-Wentworth. These collisions resulted in:
 - 6 driver, 3 passenger fatalities
 - 4 cyclist fatality
 - 5 pedestrian fatalities
 - 2,641 driver, cyclist or passenger injuries (not including fatalities)
 - 286 pedestrian injuries (not including fatalities)
 - 14,733 persons (equal to approximately 3.1 percent of the Regional population) being involved in a reported traffic collision
- * The overall frequency of collisions in Hamilton-Wentworth is generally lower than other major Canadian municipalities.

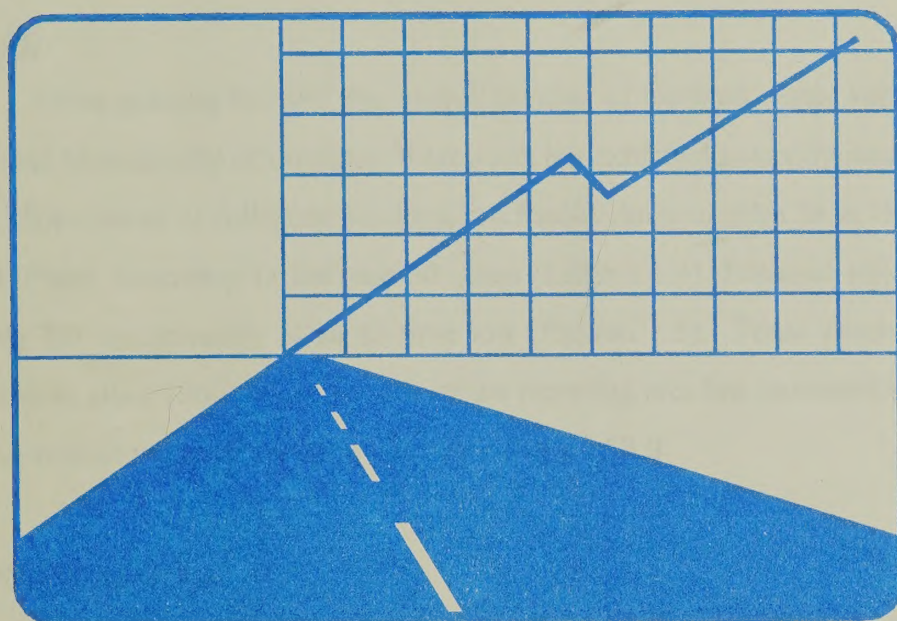
TABLE OF CONTENTS

EXECUTIVE SUMMARY 1998 COMPARED WITH PREVIOUS YEARS

	<u>Page</u>
CHAPTER ONE - TRENDS	1
General	3
Normalizing The Data	3
Collisions	3
Injuries	4
Fatalities	4
Alcohol Involvement	5
 CHAPTER TWO - LOCATIONS	 15
General	17
Area Municipality	17
High Frequency Intersection Locations	17
Comparison of Hamilton and Hamilton-Wentworth with Selected Canadian Cities	 18

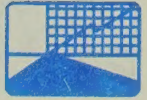
LIST OF EXHIBITS

<u>Exhibit</u>	<u>Page</u>
1.1 Motor Vehicle Collisions: History of Rates of Total Collisions and of Collisions Causing Injury/Fatality (1968-1998)	6
1.2 Personal Injuries/Fatalities: History of Injury and Fatality Rates Caused by Motor Vehicle Collisions (1968-1998)	7
1.3 Pedestrians Involved in Collisions: History of Injury and Fatality Rates (1968-1998)	8
1.4 Motor Vehicle Collision History (1968-1998)	9
1.5 History of Personal Injuries and Fatalities Caused by Motor Vehicle Collisions (1964-1998)	10
1.6 History of Pedestrian and Cyclist Injuries/Fatalities (1968-1998)	11
1.7 History of Alcohol-Related Motor Vehicle Collisions (1978-1998)	12
1.8 Injury Status of All Persons Involved in 1998	13
2.1 Collisions vs Area Municipality	19
2.2 Intersections with the Highest Number of Collisions in 1998	20
2.3 Signalized Intersections with the Highest Collision Rates, 1994-1998	22
2.4 Two-way Stop Intersections with the Highest Collision Rates, 1994-1998	25
2.5 All-way Stop Intersections with the Highest Collision Rates, 1994-1998	28
2.6 Urban Road Sections with the Highest Collision Rates, 1994-1998, City of Hamilton Arterials, Signalized Intersections not Included	30
2.7 Urban Road Sections with the Highest Collision Rates, 1994-1998, City of Hamilton Arterials, Intersections not Included	32
2.8 Rural Road Sections with the Highest Collision Rates, 1994-1998, Signalized Intersections not Included	34
2.9 Urban Road Sections with the Highest Collision Rates, 1994-1998, Intersections not Included	36
2.10 1998 Collision Statistics - Selected Canadian Cities	38



Chapter One

Trends



Chapter 1

General

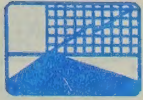
Since peaking in 1967, the overall number of reported motor vehicle collisions in the Regional Municipality of Hamilton-Wentworth has exhibited a steadily decreasing trend (Exhibit 1.4). The number of collisions resulting in a fatality dropped from 28 in 1997 to 17 in 1998, the third-lowest frequency in the past 30 years (Exhibit 1.4). Personal injuries have fluctuated widely but are presently at an all-time low (Exhibit 1.5). These decreases are particularly notable as, since 1966, the population of the reporting area has increased by a factor of 1.6 and motor vehicle registrations have risen by a factor of 3.0.

Normalizing the Data

To assess historical trends, collision data should be expressed as a normalized rate through the use of one of several factors. Information on annual motor vehicle use would provide the most accurate assessment of a motorist's exposure, and hence, likelihood of involvement in a collision. Motor vehicle registration data is somewhat less accurate as a normalizing factor, but is utilized later in this report since exposure information is not available. Population also provides a suitable and accurate normalizing factor. Exhibits 1.1, 1.2, 1.3 and associated analysis in the rest of this chapter refer to data which has been calculated on a population rate basis (based on 1996 population data), rather than on the basic number of occurrences.

Collisions

The overall motor vehicle collision rate is shown in Exhibit 1.1. As of January 1, 1978, the reporting level for property damage only collisions was raised from \$200.00 to \$400.00. On January 1, 1985, it was raised again from \$400.00 to \$700.00. The level was raised to \$1,000.00 in 1998. The reporting area also increased in 1974 and in 1997-1998. Considering these changes, the rate for total collisions shows a decline from 1977 to 1997, with the exception of 1993 and 1994. **1996, 1997 and 1998 show the lowest rates experienced in the 30 years for which records have been kept.** The rate of collisions involving injury or fatality shows a modest decline from 1973 to the present (Exhibit 1.1).



Injury collisions are also at the lowest rate for the 30-year record keeping period.

Individual trends of injuries and fatalities are discussed below.

Injuries

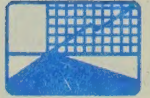
The rate of personal injury (Exhibits 1.2, 1.5) is rather volatile. However, since 1989, the rate of personal injury has been on the decline and the rate of personal injury in 1998 is the lowest it has been in the past 30 years. This volatility is likely related to the nature and severity of the collisions which could be the result of a number of factors. The rate and number of pedestrian injuries (Exhibits 1.3, 1.6) shows a significant and continuing decline from 1966 to 1992 and a period of stability from 1992 to the present.

Of the 14,733 persons involved in collisions, in 1998, 2927 received injuries. The chance of an involved person sustaining injury in a collision varied from 15.8 percent for a motor vehicle passenger, to 92.5 percent for a pedestrian. The risk of injury is significantly higher for cyclists and pedestrians (Exhibit 1.8). The percentages are high for cyclists and pedestrians, as it is unlikely that this type of collision could occur with no personal injury and less than \$1000.00 total property damage.

Fatalities

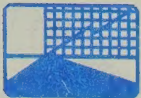
In 1998, 18 persons died in motor vehicle collisions in Hamilton-Wentworth. Fatal collisions are rare events and small changes in the number of fatalities cause large fluctuations in the fatality rate (Exhibit 1.2, 1.4). Of the 18 fatalities, 7 occurred on roads which were under Provincial jurisdiction prior to 1997.

In 1998, 5 pedestrians died in motor vehicle collisions. The fatality rate for pedestrians (Exhibit 1.3, 1.6) displays a general reducing trend, especially since 1978, although 1997 was slightly above the average for the past 10 years.



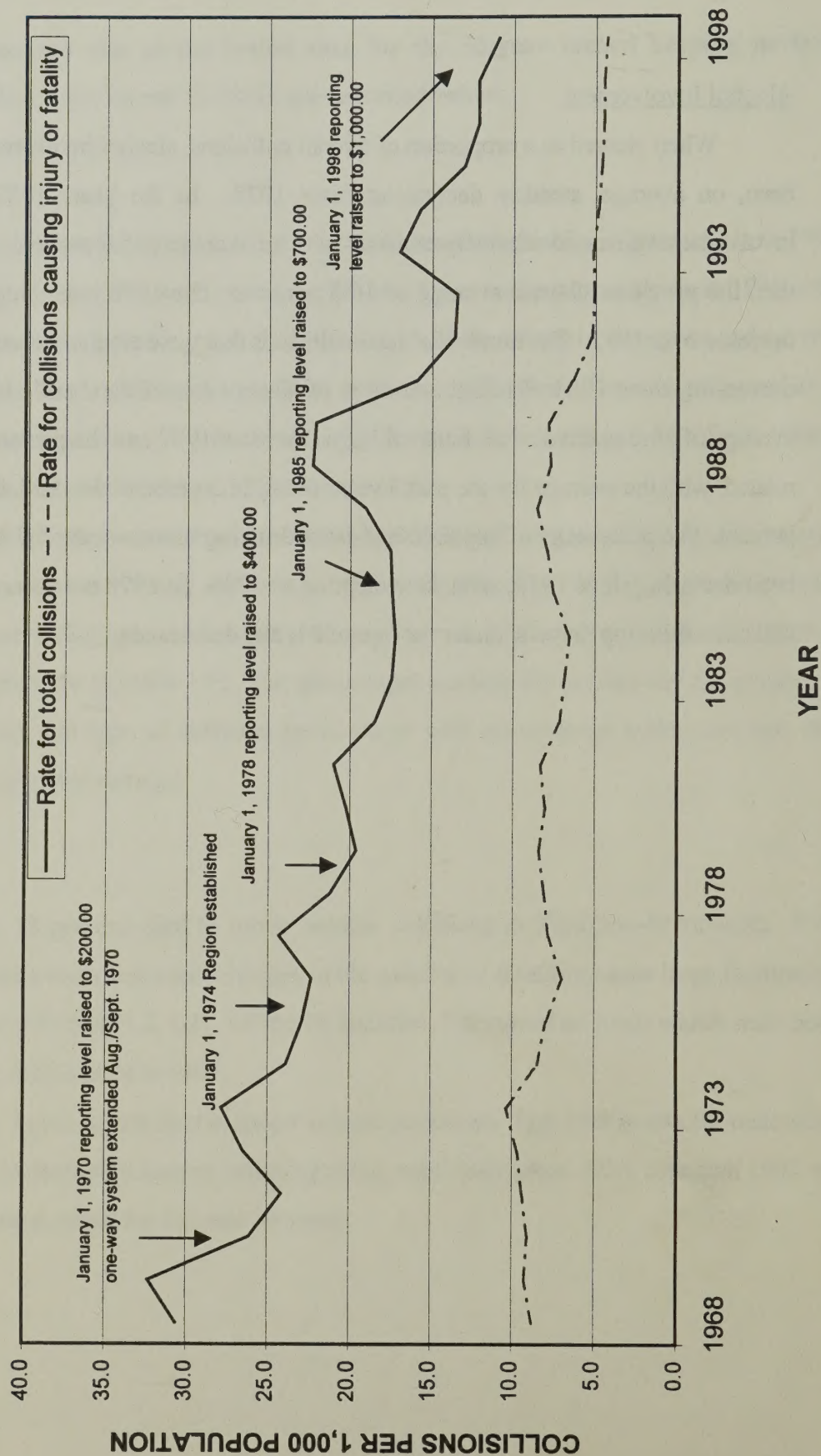
Alcohol Involvement

When viewed as a proportion of overall collisions, alcohol involvement (Exhibit 1.7) has been, on average, steadily decreasing since 1978. In the years 1988 to 1998, collision involvement remained relatively constant with an average of 5.7 percent which is much lower than the previous 12-year average of 10.3 percent. The 1998 percentage of 4.9 is a slight decrease over 1997. The number of fatal collisions that were alcohol-related has been generally decreasing since 1984. While the number of alcohol-related fatal collisions is very small, an average of 14.2 percent of all fatal collisions between 1987 and the present have been alcohol-related, with the average for the past 3 years being 11.3 percent. In 1998, that statistic was 11.8 percent. The percentage of impaired/had-been-drinking drivers under the age of 21 has steadily been declining since 1979, with the exception of 1986. In 1998 the percentage of impaired or had been drinking drivers, under the age of 21, has decreased to 4.8%.



MOTOR VEHICLE COLLISIONS: HISTORY OF RATES OF TOTAL COLLISIONS & COLLISIONS CAUSING INJURY & FATALITY

Exhibit 1.1



PERSONAL INJURIES/FATALITIES: HISTORY OF INJURY AND FATALITY RATES CAUSED BY MOTOR VEHICLE COLLISIONS

Exhibit 1.2

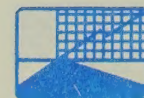
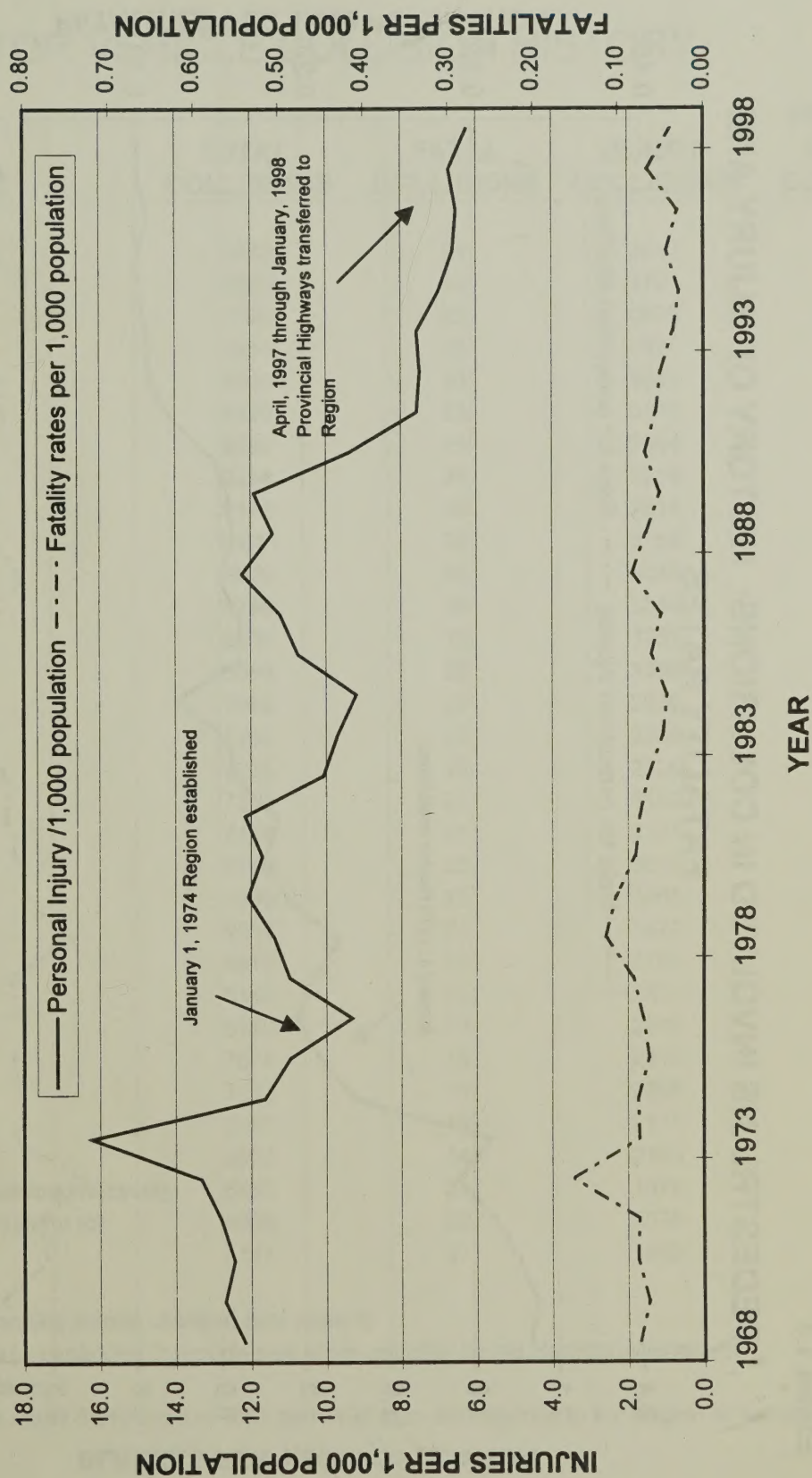
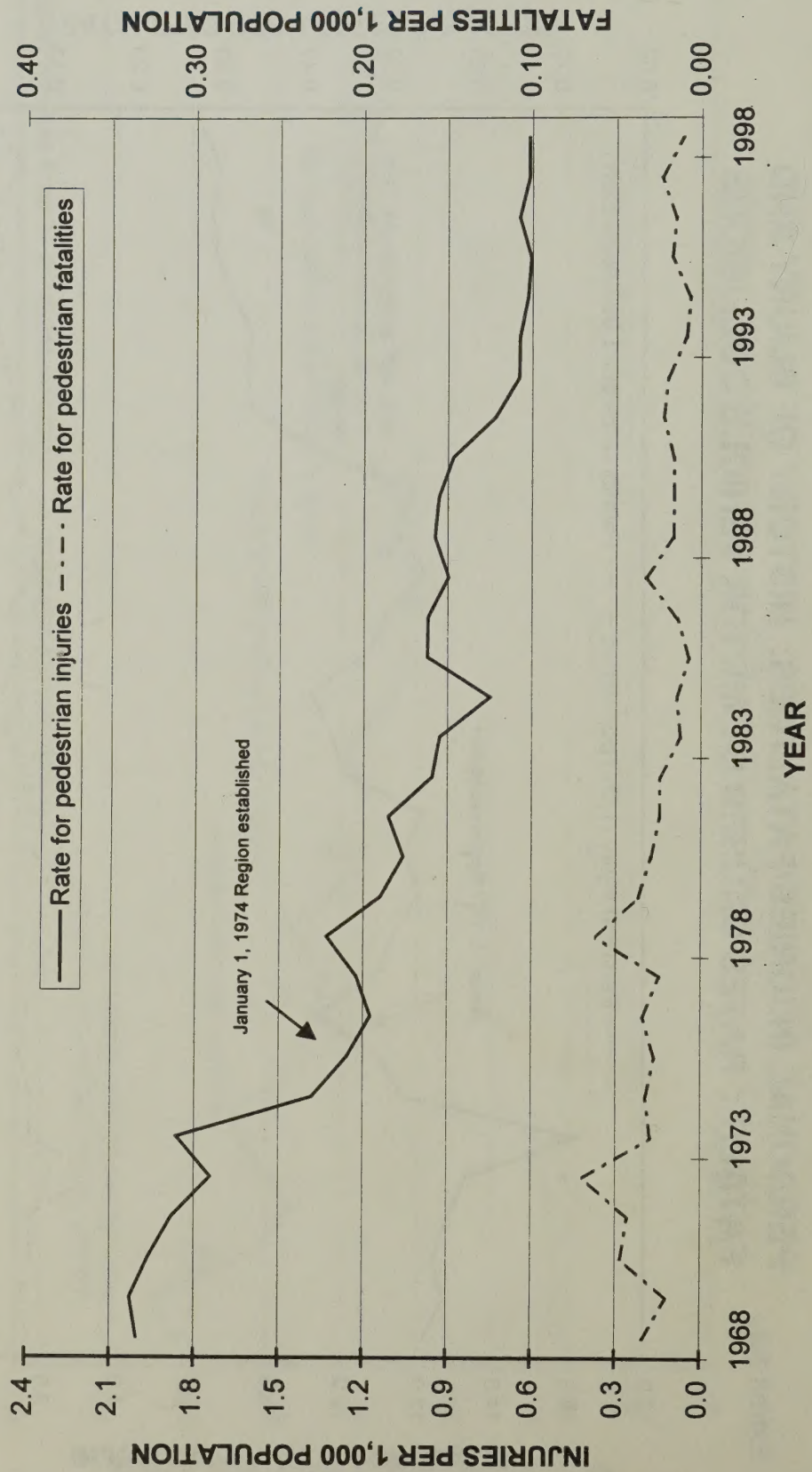




Exhibit 1.3

PEDESTRIANS INVOLVED IN COLLISIONS: HISTORY OF INJURY AND FATALITY RATES



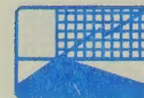


Exhibit 1.4

MOTOR VEHICLE COLLISION HISTORY

YEAR	TOTAL COLLISIONS	FATAL COLLISIONS	INJURY COLLISIONS	PROPERTY DAMAGE COLLISION
1968	8983	21	2547	6415
1969	9589	19	2721	6849
1970 (a)	7799	23	2676	5100
1971	7314	22	2821	4471
1972	8065	39	2901	5125
1973	8499	23	3143	5333
1974 (b)	9599	29	3364	6206
1975	9354	24	3219	6111
1976	9146	28	2816	6302
1977	10011	33	3182	6796
1978 (a)	8636	45	3246	5345
1979	8798	39	3389	5370
1980	9305	33	3253	5019
1981	8660	28	3398	5234
1982	7663	23	2939	4701
1983	7268	20	2839	4409
1984	7228	18	2726	4484
1985 (a)	7346	21	3153	4172
1986	7434	21	3331	4082
1987	8140	35	3615	4491
1988	9586	22	3285	6279
1989	9566	21	3372	6173
1990	6917	25	2751	4141
1991	6145	25	2331	3789
1992	6180	22	2312	3846
1993	7674	15	2313	5346
1994	7233	13	2205	5015
1995	5987	19	2111	3857
1996	5687	14	2103	3570
1997 (Previous road network)	5453	21	1979	3453
1997 (Total system) (c)	5693	28	2075	3590
1998	5111	17	1999	3095

(a) Collision reporting criteria changed (see page 3).

(b) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.

(c) Includes the roads transferred in 1997 and 1998 from the Province to the Region of Hamilton-Wentworth.



Exhibit 1.5

**HISTORY OF PERSONAL INJURIES AND FATALITIES
CAUSED BY MOTOR VEHICLE COLLISIONS**

YEAR	TOTAL COLLISIONS	PERSONS INJURED	PERSONAL INJURIES/1,000 POPULATION	NUMBER OF FATALITIES	FATALITIES/ 100,000 POPULATION	FATALITIES/ 10,000 REGISTERED VEHICLES	
1964	9948	3305	11.9	32	11.5	3.4	
1965	10783	3824	13.4	27	9.5	2.6	
1966	9950	3746	12.6	28	9.8	2.6	
1967	9106	3484	12.2	39	13.7	3.6	
1968	8983	3574	12.8	22	7.9	1.9	
1969	9589	3768	12.7	19	6.4	1.6	
1970 (a)	7799	3717	12.3	23	7.5	2.0	
1971	7314	3876	12.5	23	7.0	1.9	
1972	8065	4055	13.5	46	15.3	3.4	(b)
1973	8499	4951	15.5	23	7.2	1.6	
1974 (c)	9599	4678	11.9	31	7.9	2.0	(b)
1975	9354	4474	11.2	26	6.5	1.6	(b)
1976	9146	3811	9.3	29	7.1	1.8	(b)
1977	10011	4513	11.0	34	8.3	2.0	(b)
1978 (a)	8636	4635	11.4	47	11.6	2.1	(d)
1979	8798	4923	12.1	42	10.3	2.2	(d)
1980	8305	4800	11.7	33	8.0	1.4	(d)
1981	8660	5015	12.3	31	7.6	1.1	(d)
1982	7663	4175	10.3	27	6.6	0.9	
1983	7268	4041	9.9	20	4.9	1.1	(e)
1984	7228	3855	9.5	18	3.8	0.8	(e)
1985 (a)	7346	4529	10.8	26	6.2	1.2	(e)
1986	7434	4758	11.3	21	5.0	0.9	(e)
1987	8140	5220	12.4	36	8.4	1.5	(e)
1988	9586	4898	11.4	29	6.8	1.2	(e)
1989	9566	5145	11.9	22	5.1	0.9	(e)
1990	6917	4053	9.4	30	6.9	1.2	(e)
1991	6415	3420	7.6	25	5.5	1.0	(d)
1992	6180	3439	7.5	23	5.0	0.8	(e)
1993	7674	3421	7.6	16	3.5	0.5	(e)
1994	7233	3213	7.4	13	2.8	0.4	(e)
1995	5987	3061	6.7	20	4.3	0.6	(e)
1996	5687	3066	6.6	14	2.9	0.4	(e)
1997 (f)	5693	3173	6.8	31	6.6	1.4	(e)
1998	5111	2945	6.3	18	3.8	0.5	(e)

(a) Collision reporting criteria changed (see page 3).

(b) Registration estimated from total Ontario registrations.

(c) Reporting area expanded to include new areas patrolled by the Hamilton-Wentworth Regional Police.

(d) Registration data from licence information.

(e) Registration data from licence information for Wentworth County.

(f) Includes roads transferred in 1997 and 1998 from the Province to the Region of Hamilton-Wentworth.

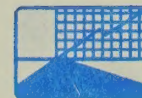


Exhibit 1.6

HISTORY OF PEDESTRIAN AND CYCLIST INJURIES AND FATALITIES

YEAR	COLLISIONS INVOLVING PEDESTRIANS (c)	PEDESTRIANS INJURED (a)	PEDESTRIAN FATALITIES	COLLISIONS INVOLVING CYCLISTS (c)	CYCLISTS INJURED (a)	CYCLIST FATALITIES
1968		588	10		84	1
1969		602	6		91	2
1970		586	14		101	1
1971		570	13		155	2
1972		530	21		156	2
1973		569	9		197	1
1974 (b)		555	13		192	3
1975		513	11		235	0
1976		480	14		195	0
1977		503	10		193	3
1978		542	25		162	1
1979		464	15		177	4
1980		434	12		178	1
1981		458	10		159	1
1982		396	10		252	2
1983		387	5		200	2
1984		314	6		175	1
1985		410	3		239	2
1986	384	412	6	229	228	2
1987	379	383	14	244	244	2
1988	401	406	7	239	225	0
1989	411	403	7	164	154	3
1990	381	383	7	208	195	0
1991	332	330	10	193	185	3
1992	300	297	9	219	209	3
1993	299	291	4	201	183	0
1994	290	283	3	196	185	2
1995	293	286	8	163	152	1
1996	303	302	7	150	135	1
1997 (d)	294	286	11	158	140	1
1998 (d)	281	286	5	197	177	4

(a) One or more pedestrian/cyclist could be involved and a fatality/injury may not have occurred. Includes injuries and fatalities.

(b) Prior to this year, reporting was for the City of Hamilton only.

(c) This information was not available until 1986.

(d) Includes roads transferred in 1997 and 1998 from the Province to the Region of Hamilton-Wentworth.

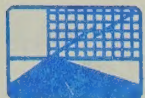


Exhibit 1.7

HISTORY OF ALCOHOL - RELATED MOTOR VEHICLE COLLISIONS

YEAR	TOTAL REPORTED COLLISIONS	TOTAL ALCOHOL- RELATED COLLISIONS	% OF TOTAL COLLISIONS INVOLVING ALCOHOL	% IMPAIRED OR HAD BEEN DRINKING DRIVERS UNDER THE AGE OF 21	TOTAL FATAL COLLISIONS	ALCOHOL- RELATED FATAL COLLISIONS (a)	% FATAL COLLISIONS HAVING ALCOHOL INVOLVED
1978	8636	1128	13.1	22.1	45	11	24.4
1979	8798	1139	12.9	22.1	39	5	12.8
1980	8305	929	11.2	18.7	33	11	33.3
1981	8660	1053	12.2	16.4	28	8	28.6
1982	7663	895	11.7	19.0	23	3	13.0
1983	7268	765	10.5	18.6	20	5	25.0
1984	7228	729	10.1	15.0	18	5	27.8
1985	7346	644	8.8	12.7	21	5	23.8
1986	7434	596	8.0	20.5	21	4	19.0
1987	8140	589	7.2	11.9	35	5	14.3
1988	9586	582	6.1	9.9	22	2	9.1
1989	9566	542	5.7	6.7	21	6	28.6
1990	6917	430	6.2	6.6	25	4	16.0
1991	6145	385	6.3	7.6	25	3	12.0
1992	6180	398	6.4	2.1	22	0	0.0
1993	7674	397	5.1	5.5	15	4	26.7
1994	7233	359	5.0	4.7	13	2	15.4
1995	5987	327	5.5	3.7	19	1	5.3
1996	5687	340	5.9	7.9	14	3	21.4
1997(b)	5693	304	5.3	7.8	28	2	7.1
1998(b)	5111	249	4.9	4.8	17	2	11.8

(a) Includes drivers classified as impaired due to alcohol or classified as had been drinking.

(b) Includes roads transferred in 1997 and 1998 from the Province to the Region of Hamilton-Wentworth.

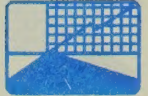


Exhibit 1.8

INJURY STATUS OF ALL PERSONS INVOLVED

DESCRIPTION OF PERSONS INVOLVED	PERSONS INVOLVED	PERSONAL INJURIES & FATALITIES	% OF PERSONS INJURED/ PERSONS INVOLVED	TYPE OF INJURY*			
				FATAL	MAJOR	MINOR	MINIMAL
DRIVER**	8954	1638	18.3%	6	57	655	920
CYCLIST	206	181	87.9%	4	18	72	87
PASSENGER	5259	835	15.9%	3	28	341	463
PEDESTRIAN	314	291	92.7%	5	23	133	130
TOTAL	14733	2945	20.0%	18	126	1201	1600

FOR APPROXIMATELY EVERY 22 RESIDENTS OF THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH, 1 PERSON WAS INVOLVED IN A MOTOR VEHICLE COLLISION IN 1998.

THERE WAS APPROXIMATELY A 1 IN 5 CHANCE THAT A PERSON INVOLVED IN A TRAFFIC COLLISION WOULD BE INJURED.

* Definitions of injury types:

Major: Person admitted to the hospital for treatment of injuries received in the collision.

Minor: Person went to the hospital for medical treatment but was released without being admitted.

Minimal: Person did not go to a hospital for medical treatment upon leaving the scene of the collision.

**does not include hit & run or Failed To Remain drivers.



1998 Hamilton-Wentworth Collision Report

TRENDS

INJURY STATUS OF ALL PERSONS INVOLVED

PERSONS INVOLVED	PERSONS INJURED	PERSONS KILLED	PERSONS WITH INJURIES	PERSONS WITH FATALITIES
1	1	0	1	0
2	2	0	2	0
3	3	0	3	0
4	4	0	4	0
5	5	0	5	0
6	6	0	6	0
7	7	0	7	0
8	8	0	8	0
9	9	0	9	0
10	10	0	10	0

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

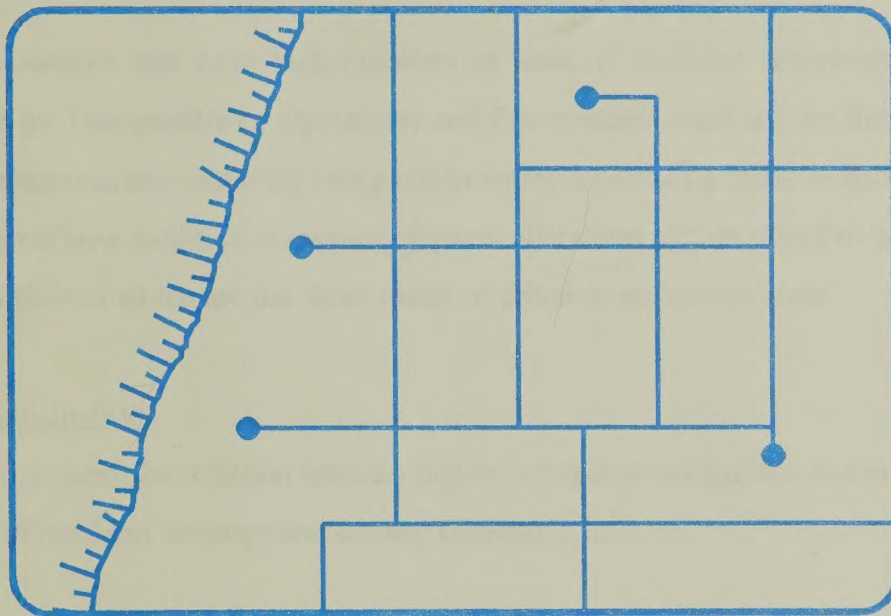
INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED

INJURY STATUS OF ALL PERSONS INVOLVED



Chapter Two

Locations



Chapter 2

General

Locations that have high numbers or rates of collision occurrence receive regular attention by Transportation, Operations and Environment staff and by the Regional Police. Countermeasures are constantly being implemented for existing facilities and incorporated into the design of new facilities. However, physical alterations are not effective in preventing many traffic collisions which are the direct result of driver or pedestrian error.

Area Municipality

In general, the collision rates are higher in larger municipalities and in those with higher degrees of road and development density (Exhibit 2.1).

High Frequency Intersection Locations

Exhibit 2.2 represents a list of the 46 locations which experienced the highest number of collision occurrences in 1998. Virtually all-high collision locations are signalized. All 1998 collisions occurring at traffic signals were subjected to the control chart analysis technique (Exhibit 2.3) which analyzes rates based on volumes of traffic. Exhibit 2.3 also provides a five-year average for each intersection.

Exhibits 2.4 and 2.5 show two-way stop locations and all-way stop locations with the highest collision rates. These exhibits are not comprehensive, in that traffic volume information is only collected for the busier or more important intersections in each classification. It is likely that the average rate of collision occurrence for each class, when all locations were considered, would be significantly lower.

Exhibits 2.6 and 2.7 provide data on rates of collision occurrence on urban roadway sections, showing the 25 sections of major roadway with the highest rates. Exhibit 2.6 shows rates which are calculated including collisions at unsignalized intersections but excluding collisions at signalized intersections. Exhibit 2.7 shows rates which are calculated excluding any collisions occurring within 9 m of an intersection (signalized or unsignalized).



Exhibits 2.8 and 2.9 provide parallel data to 2.6 and 2.7 for rural roadway sections.

Exhibits in this chapter do not necessarily represent priority lists for improvements as other factors must be taken into account such as cost-benefit considerations or the deployment of other collision countermeasures which may be more cost-effective.

In many cases, countermeasures have already been implemented or these locations are under consideration for various forms of improvement on a priority basis.

Comparison of Hamilton and Hamilton-Wentworth with other Cities

On the basis of total collisions per 1,000 population, Hamilton and Hamilton-Wentworth are very close to the lowest rates in Canada (Exhibit 2.10). On the basis of injury collisions per 1,000 population, the City and Region are better than average.



Exhibit 2.1

COLLISIONS vs AREA MUNICIPALITY

MUNICIPALITY	CLASS OF COLLISION (a)				COLLISION RATE PER 1,000 POP.(c)
	FATAL	NON-FATAL INJURY	PROPERTY DAMAGE ONLY	ALL COLLISIONS (b)	
ANCASTER	1	83	178	262	11.2
DUNDAS	0	56	84	140	6.1
FLAMBOROUGH	1	81	151	233	6.8
GLANBROOK	1	41	63	105	9.9
CITY OF HAMILTON	9	1519	2339	3867	12.0
STONEY CREEK	5	219	280	504	9.3
TOTAL FOR THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH	17	1999	3095	5111	10.9

(a) Collisions reported to the Hamilton-Wentworth Regional Police only; areas patrolled by the Provincial Police (e.g. Highway 403, Q.E.W.) are not included.

(b) Location data missing from a small number of collisions.

(c) Population figure extrapolated based on 1996 population data for each municipality.

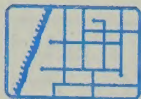
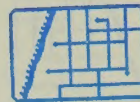


Exhibit 2.2

INTERSECTIONS WITH THE HIGHEST NUMBER OF COLLISIONS IN 1998 (a)

INTERSECTION (b)	TYPE OF TRAFFIC CONTROL	NUMBER OF COLLISIONS	5-YEAR AVERAGE
1 HWY 20 S N OF HWY 53 & MUD (SC)	TRAFFIC SIGNAL	20	16.0
2 DUNDURN & KING	TRAFFIC SIGNAL	19	17.4
3 NASH & QUEENSTON	TRAFFIC SIGNAL	15	15.2
4 BURLINGTON & KENILWORTH	TRAFFIC SIGNAL	13	8.2
5 CENTENNIAL PKY. & DELEWANA	TRAFFIC SIGNAL	13	7.6
6 MACKLIN & MAIN	TRAFFIC SIGNAL	12	8.4
7 MAIN & VICTORIA	TRAFFIC SIGNAL	12	14.0
8 MOHAWK & UPPER OTTAWA	TRAFFIC SIGNAL	12	8.8
9 MOHAWK & UPPER WENTWORTH	TRAFFIC SIGNAL	12	11.2
10 BARTON & CENTENNIAL PKY.	TRAFFIC SIGNAL	11	11.8
11 DUNDURN & MAIN	TRAFFIC SIGNAL	11	15.0
12 DUNDURN & YORK	TRAFFIC SIGNAL	11	9.4
13 GAGE & MAIN	TRAFFIC SIGNAL	11	7.8
14 KING & MOUNT ALBION	TRAFFIC SIGNAL	11	7.6
15 MAIN & OTTAWA	TRAFFIC SIGNAL	11	6.4
16 BARTON & KENILWORTH	TRAFFIC SIGNAL	10	8.8
17 BARTON & STRATHEARNE	TRAFFIC SIGNAL	10	9.8
18 BARTON & WOODWARD	TRAFFIC SIGNAL	10	8.6
19 CARLUKE & FIDDLER'S GREEN	NB/SB STOP	10	7.0
20 HWY 20/HWY 53 & HWY 20 S N OF 53/HW	TRAFFIC SIGNAL	10	11.4
21 KING & MAIN	TRAFFIC SIGNAL	10	5.2
22 KING & PARKDALE	TRAFFIC SIGNAL	10	11.2
23 ABERDEEN & LONGWOOD	TRAFFIC SIGNAL	9	6.6



INTERSECTION (b)	TYPE OF TRAFFIC CONTROL	NUMBER OF COLLISIONS	5-YEAR AVERAGE
24 ABERDEEN & QUEEN	TRAFFIC SIGNAL	9	6.4
25 CANNON & GAGE	TRAFFIC SIGNAL	9	8.4
26 CANNON/YORK & QUEEN	TRAFFIC SIGNAL	9	8.4
27 CENTENNIAL PKY & HWY8/QUEENSTON (SC)	TRAFFIC SIGNAL	9	19.6
28 GAGE & KING	TRAFFIC SIGNAL	9	7.2
29 GOLFLINKS/MOHAWK & EB OFF R./STONECHURCH	TRAFFIC SIGNAL	9	5.2
30 JAMES & WILSON/YORK	TRAFFIC SIGNAL	9	6.2
31 KING & VICTORIA	TRAFFIC SIGNAL	9	9.2
32 STONE CHURCH & UPPER JAMES	TRAFFIC SIGNAL	9	9.4
33 ABERDEEN & DUNDURN	TRAFFIC SIGNAL	8	9.6
34 ARKL/JOHN/JOLLEY CUT & ST. JOSEPH'S	TRAFFIC SIGNAL	8	5.6
35 JOLLEY CUT/ U. WELLINGTON & CONCESSION	TRAFFIC SIGNAL	8	4.6
36 BALMORAL & MAIN	NB/SB STOP	8	4.2
37 BAY & KING	TRAFFIC SIGNAL	8	5.8
38 CANNON & PARK	SB STOP	8	2.6
39 CANNON & VICTORIA	TRAFFIC SIGNAL	8	5.4
40 CHARLTON & JAMES	TRAFFIC SIGNAL	8	5.6
41 COOTES/LELAND & MAIN	TRAFFIC SIGNAL	8	6.4
42 DART/DART EB SB OFF & STONECHURCH	TRAFFIC SIGNAL	8	5.0
43 EAST AVE. & KING	NB/SB STOP	8	3.6
44 FENNELL/SCENIC& GARTH	TRAFFIC SIGNAL	8	11.0
45 GARTH & MOHAWK	TRAFFIC SIGNAL	8	6.6
46 JACKSON & JOHN	TRAFFIC SIGNAL	8	4.0

(a) Only collisions occurring within 31 feet (9.5 m) of the intersection are defined as being "in" the intersection and are included in this list.

(b) All intersections are in the City of Hamilton unless otherwise indicated:
(A) Ancaster; (SC) Stoney Creek, (D) Dundas, (F) Flamborough

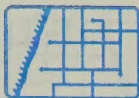


Exhibit 2.3

SIGNALIZED INTERSECTIONS WITH THE HIGHEST COLLISION RATES FROM 1994 to 1998

INTERSECTION	AVG. 3-YR			NUMBER OF COLLISIONS							COMMENT
	RL (a)	RC (b)	RL/RC	AWDT (c)	1994	1995	1996	1997	1998	5-YR AVG.	
1 HWY 5/HWY 8 (F) & HWY 5/HWY 52/W	2.04	1.13	1.81	11766	5	15	7	13	2	8.4	
2 QUEENSDALE AV & UPPER GAGE AV	1.75	0.98	1.78	17986	10	14	14	12	5	11.0	(e)
3 WILSON ST & JOHN ST	1.40	0.90	1.56	24499	13	12	21	8	6	12.0	(d)
4 HUNTER ST & JOHN ST	1.34	0.89	1.51	25618	12	12	18	11	7	12.0	(g,i)
5 MUD & HWY 20 S N OF 53	1.33	0.82	1.62	34353	24	10	15	11	20	16.0	(q)
6 HWY 2 (A) & HWY 53	1.29	0.85	1.53	30519	13	16	15	20	5	13.8	
7 BARTON ST & STRATHEARNE	1.27	0.92	1.37	22132	12	6	13	8	10	9.8	
8 KING WILLIAM ST & CATHARINE ST	1.24	1.47	0.85	5989	5	1	3	2	2	2.6	(d)
9 CANNON ST & HUGHSON ST	1.19	0.95	1.25	20271	16	14	5	2	5	8.4	
10 HWY 53/HWY 56 & HWY 20 S N OF 53	1.18	0.87	1.36	27690	11	9	13	14	10	11.4	
11 MUD ST & PARAMOUNT DR	1.16	1.02	1.15	16206	5	8	6	8	6	6.6	
12 MAIN ST & MACKLIN ST	1.16	0.94	1.23	20647	8	7	8	8	11	8.4	
13 KING ST & PARKDALE AVE	1.14	0.86	1.32	28167	5	16	14	11	10	11.2	(n)
14 ABERDEEN AVE & DUNDURN ST	1.13	0.90	1.26	24225	12	11	8	9	8	9.6	(p)
15 BURLINGTON ST & KENILWORTH AV	1.12	0.94	1.20	20868	4	7	8	9	13	8.2	
16 QUEENSTON RD & NASH RD	1.10	0.79	1.38	39627	9	19	20	13	15	15.2	(o)
17 CANNON ST & GAGE AVE	1.10	0.93	1.18	21915	11	8	8	6	9	8.4	(h)
18 CHARLTON AVE & HESS ST	1.10	1.23	0.89	9400	6	1	3	2	6	3.6	(g)
19 BURLINGTON ST & PARKDALE AVE	1.06	0.97	1.10	18881	3	5	7	14	6	7.0	
20 KING ST & DUNDURN ST	1.04	0.76	1.37	47922	22	20	11	16	18	17.4	
21 BARTON ST & BAY ST	1.03	1.20	0.86	9972	3	4	6	3	2	3.6	
22 BARTON ST & GAGE AVE	1.03	0.86	1.20	28839	15	12	15	4	6	10.4	(f)
23 RENNIE ST & WOODWARD AVE	1.00	1.16	0.86	10855	5	3	5	5	1	3.8	
24 BARTON ST & JOHN ST	0.96	0.97	0.98	18474	4	8	4	8	7	6.2	(g)



INTERSECTION	RL (a)	RC (b)	RL/RC	AVG. 3-YR AWDT (c)	NUMBER OF COLLISIONS					COMMENT
					1994	1995	1996	1997	1998	
25 HUNTER ST & CAROLINE ST	0.96	1.36	0.70	7171	4	5	0	2	1	2.4
26 QUEENSTON RD & CENTENNIAL	0.95	0.73	1.31	58835	24	22	22	22	8	19.6
27 BARTON ST & QUEEN/STUART	0.95	1.24	0.76	9037	6	4	3	1	1	3.0
28 BEACH RD & GAGE AVE	0.95	1.46	0.65	6025	4	4	0	0	2	2.0
29 KENTLEY DR & NASH RD	0.95	1.04	0.91	15118	3	5	14	3	0	5.0 (j)
30 MAIN ST & VICTORIA AVE	0.94	0.78	1.21	42446	13	9	7	29	12	14.0
31 LIMERIDGE RD & GARTH ST	0.94	0.93	1.02	21834	16	11	5	0	4	7.2 (d,s)
32 MAIN ST & JOHN ST	0.90	0.81	1.11	36050	14	13	11	12	7	11.4 (l)
33 QUEENSDALE AV & U. WENTWORTH	0.90	1.10	0.82	12673	5	7	1	5	2	4.0
34 YORK BLVD & LOCKE ST	0.89	0.82	1.09	35398	15	12	11	10	7	11.0 (h)
35 YORK BLVD & HESS ST	0.87	0.95	0.92	20325	8	5	5	7	6	6.2
36 WILSON ST & HUGHSON ST	0.84	0.95	0.89	20421	11	2	5	7	5	6.0
37 BARTON ST & WOODWARD AVE	0.84	0.85	0.98	29374	8	6	13	6	10	8.6
38 KING ST (SC) & GREEN RD	0.83	1.09	0.76	13035	5	6	5	1	2	3.8
39 CANNON ST & OTTAWA ST	0.83	0.95	0.87	19961	7	4	5	13	0	5.8
40 LIMERIDGE RD & WEST 5th ST	0.82	1.09	0.76	13187	7	3	6	2	1	3.8 (s)
41 MOHAWK RD & U. OTTAWA ST	0.81	0.84	0.96	31124	4	3	4	5	28	8.8
42 CANNON ST & JAMES ST	0.81	0.86	0.94	29118	14	9	5	7	6	8.2
43 MOHAWK RD & U. WENTWORTH	0.80	0.79	1.01	39843	12	11	12	9	12	11.2
44 MAIN ST & KENILWORTH AV	0.80	0.76	1.05	47304	13	13	19	16	5	13.2
45 INDUSTRIAL DR & OTTAWA ST	0.80	0.92	0.86	22219	9	4	6	4	8	6.2
46 MAIN ST & DUNDURN ST	0.80	0.74	1.07	53827	17	17	12	17	12	15.0 (k)
47 CANNON ST & BIRCH AVE	0.80	1.02	0.78	15792	5	3	2	5	7	4.4
48 QUEENSTON RD & PARKDALE AVE	0.77	0.79	0.97	40292	15	16	11	6	6	10.8
49 HWY 8 & GRAYS (SC)	0.77	0.82	0.93	34330	9	10	5	16	6	9.2
50 FENNELL AVE & GARTH ST	0.76	0.79	0.97	41230	11	9	13	14	8	11.0
OVERALL STAT. FOR ALL SIGNAL INTERSECTIONS:					4.1					

OVERALL STAT. FOR ALL SIGNAL INTERSECTIONS: 0.46

NUMBER OF HAMILTON-WENTWORTH TRAFFIC SIGNAL INTERSECTIONS IN 1998 = 423



Notes:

- (a) RL is the number of collisions, per million vehicles entering the intersection, occurring within 31 feet of an individual intersection.
- (b) RC is a volume-adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the intersection in question is significantly higher than would normally be expected.

$$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$

Where: Ra = systemwide average collision rate for all traffic signal locations (0.458 collisions per million vehicle entries)
K = constant (=1.65 for 95 % confidence level)
m = vehicle exposure at the location in million vehicles entering per year (AWDTx340/1,000,000)

(c) AWDT - Average Weekday Daily Traffic (total vehicles entering the intersection).

(d) Improved signal timing or phasing in 1996.

(e) Run as separate phase for part of 1997, then NB/SB left-turn lanes added through reconstruction.

(f) Referred to Transportation Dept. (Roads Division) for NB/SB left-turn lane design and programming.

(g) Improved signal display in 1996.

(h) Referred to Transportation Dept. (Roads Division) for EB/WB left-turn lane design and programming.

(i) Improved signing in 1996.

(j) Signal phasing changed in 1997.

(k) Signing design under review.

(l) Installation of delineation to discourage illegal movements installed in 1990.

(m) This intersection no longer exists due to the construction of the Lincoln Alexander Parkway.

(n) Added NB/SB left turn lanes in 1996.

(o) Added NB/SB left turn lane in 1997.

(p) Signal phasing under review.

(q) Protected only left-turn phasing installed in 1998.

(r) Lane designation signing added in 1998.

(s) Limeridge Rd. volumes greatly reduced following the opening of the Lincoln Alexander Parkway in late 1997

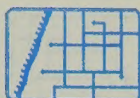
* Data not applicable

Exhibit 2.4

TWO-WAY STOP INTERSECTIONS WITH THE HIGHEST COLLISION RATES FROM 1994 TO 1998

INTERSECTION	RL (a)	RC (b)	RL/RC	AWDT (c)	NUMBER OF COLLISIONS					5-YR AVG.	COMMENT
					1994	1995	1996	1997	1998		
1 CATHARINE & REBECCA	4.64	1.64	2.83	4813	11	9	12	3	4	7.8	
2 HUGHSON ST & REBECCA ST	2.83	1.60	1.76	5061	5	99	99	99	99	5.0	(l)
3 BOOK RD & FIDDLERS GREEN	2.82	1.29	2.19	8619	8	11	9	6	99	8.5	(y,s,u)
4 CARLUKE RD & FIDDLERS GREEN	2.76	1.38	2.01	7247	6	8	5	6	10	7.0	(y,t,v,x)
5 BARTON ST & MACNAB ST	2.55	1.27	2.01	8966	10	10	2	11	7	8.0	(d,w)
6 FERGUSON AVE & JACKSON ST	2.25	2.03	1.11	3053	1	2	4	3	2	2.4	
7 CATHARINE ST & JACKSON ST	2.12	1.28	1.66	8754	8	5	99	99	99	6.5	(h,i,j,k)
8 MACNAB & VINE	2.10	2.05	1.02	3000	3	1	3	3	1	2.2	
9 PARK ST & VINE ST	1.96	2.08	0.94	2925	3	5	0	2	0	2.0	(y,e)
10 CAROLINE & MARKET	1.80	1.76	1.02	4136	2	3	3	3	2	2.6	
11 HUNTER ST & WALNUT ST	1.71	1.46	1.18	6341	4	5	2	6	2	3.8	
12 FERGUSON AVE & YOUNG	1.56	1.86	0.84	3671	2	1	1	3	3	2.0	
13 CAROLINE & CHARLTON	1.46	1.31	1.11	8244	4	5	5	3	4	4.2	(f,g)
14 CHARLTON AVE & HUGHSON ST	1.39	1.25	1.11	9241	4	5	99	99	99	4.5	(n)
15 FIRST RD E & MUD	1.24	1.31	0.95	8306	3	10	1	4	0	3.6	
16 KENILWORTH & MOUNTAIN BROW	1.22	1.11	1.10	13112	5	8	6	4	5	5.6	
17 MUD & SECOND RD E	1.08	1.51	0.72	5800	1	3	2	4	1	2.2	
18 NEBO RD (G) & WHITE CHURCH	1.02	1.94	0.53	3361	1	2	0	1	2	1.2	
19 BARTON (SC) & JONES RD	0.88	1.50	0.58	5862	2	1	2	3	1	1.8	
20 HESS & JACKSON	0.86	1.33	0.65	8000	4	0	2	4	2	2.4	
21 BARNESDALE & CANNON ST	0.83	1.09	0.76	13759	4	6	5	1	4	4.0	
22 CANNON ST & MACNAB ST	0.81	0.96	0.85	20370	11	9	2	4	3	5.8	(m)
23 FIFTY & HWY 8 (SC)	0.80	1.25	0.64	9279	2	2	1	6	2	2.6	
24 HAMILTON (A) & WILSON/HWY 2	0.80	1.25	0.64	9340	4	4	2	1	2	2.6	





1998 Hamilton-Wentworth Collision Report

INTERSECTION	RL (a)	RC (b)	RL/RC	AVG. 3-YR AWDT (c)	NUMBER OF COLLISIONS					5-YR AVG.	COMMENT
					1994	1995	1996	1997	1998		
25 MAIN ST (F) & PARKSIDE DR	0.76	1.36	0.56	7558	4	2	2	1	1	2.0	
26 HUGHSON ST & YOUNG ST	0.75	1.35	0.56	7646	2	2	1	4	1	2.0	
27 KING ST & PARADISE RD	0.73	0.94	0.79	22584	8	8	6	2	5	5.8	(i,j,o,p,q)
28 KING ST & WEST AVE	0.71	0.92	0.77	24139	10	3	7	7	3	6.0	
29 DUNSMURE & OTTAWA	0.71	1.14	0.62	12100	4	2	1	4	4	3.0	
30 DELAWARE & SANFORD	0.70	1.19	0.59	10565	4	3	1	4	1	2.6	
31 RUTHERFORD & WENTWORTH	0.67	1.29	0.52	8531	2	1	3	4	0	2.0	
32 FENNEL & SOUTHWOOD	0.67	1.41	0.47	6838	2	2	1	3	0	1.6	
33 CAROLINE ST & HERKIMER ST	0.65	1.13	0.57	12412	5	2	4	2	1	2.8	
34 FIDDLERS GREEN & JERSEYVILLE RD	0.63	1.46	0.43	6338	3	2	2	0	0	1.4	
35 CHARLTON & MACNAB	0.62	1.17	0.53	11142	2	4	1	3	2	2.4	
36 CHARLTON AVE & VICTORIA AVE	0.60	1.05	0.57	15318	1	3	5	7	0	3.2	
37 BARTON ST & HUGHSON ST	0.60	1.07	0.56	14410	2	2	4	4	3	3.0	
38 AUGUSTA ST & JOHN ST	0.59	0.96	0.61	20455	4	5	3	7	2	4.2	
39 HUGHSON ST & JACKSON ST	0.57	1.61	0.35	5015	2	99	99	99	0	1.0	
40 KING & TISDALE ST	0.52	0.91	0.57	25307	2	5	8	3	5	4.6	
41 STEVEN ST & WILSON ST	0.50	1.13	0.45	12470	2	3	3	1	2	2.2	
42 COCHRANE & QUEENSTON	0.49	0.91	0.54	24574	5	6	3	5	2	4.2	
43 HERKIMER ST & MACNAB ST	0.48	1.15	0.42	11806	1	2	3	2	2	2.0	
44 FOREST & JOHN	0.48	0.97	0.50	20096	5	2	3	6	1	3.4	
45 BRUCEDALE & U. WELLINGTON	0.48	0.95	0.50	21650	7	4	1	5	1	3.6	
46 FOREST AVE & HUGHSON ST	0.47	1.63	0.29	4850	0	0	2	1	1	0.8	
47 MAIN & WEIR ST	0.46	0.88	0.52	28669	6	2	6	7	2	4.6	
48 BARNESDALE AV & BARTON	0.46	0.99	0.46	18728	1	2	2	5	5	3.0	
49 BRIGADE & U. WELLINGTON	0.45	1.61	0.28	5042	2	0	0	1	1	0.8	
50 MAIN & QUEENSTON	0.45	0.90	0.51	26561	3	5	4	6	3	4.2	

OVERALL STATISTICS FOR INTERSECTIONS:
(SEE NOTE (d)):

0.47

2.0



Notes:

- (a) RL is the number of collisions, per million vehicles entering the intersection, occurring within 31 feet of an individual intersection.
- (b) RC is a volume-adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the intersection in question is significantly higher than would normally be expected.

$$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$

Where: Ra = systemwide average collision rate for all 2-way stop locations (0.470 collisions per million vehicle entries)
 K = constant (=1.65 for 95 % confidence level)
 m = vehicle exposure at the location in million vehicles entering per year (AWDTx340/1,000,000)

- (c) AWDT - Average Weekday Daily Traffic (total vehicles entering the intersection).
- (d) The averages shown are for those locations in the database only. Volume information is not available for many minor neighbourhood intersections, so only major two-way stop locations are included.
- (e) Installed No Stopping zone to improve visibility in 1996.
- (f) Installed No Stopping zone to improve visibility in 1995.
- (g) Moved hydro pole to improve visibility in 1996.
- (h) Converted to All-Way Stop in 1996.
- (i) Improved signing in 1996.
- (j) Improved lane markings in 1996.
- (k) Installed overhead flasher in 1996.
- (l) Converted to All-Way Stop in 1995.
- (m) Lane markings improved in 1997.
- (n) Converted to Intersection Pedestrian Signal in 1996.
- (o) Relocated flasher on curve on island in 1997.
- (p) Installed raised pavement markers on curb edge in 1997.
- (q) Intersection contains sharp curve.
- (r) Converted to Traffic Signal in 1995.
- (s) Removed trees to improve visibility in 1995.
- (t) Improved signing in 1997.
- (u) Signalized in 1998.
- (v) Revised flashers in 1997.
- (w) Visibility improved in 1998.
- (x) Converted to an All-Way stop in 1999.
- (y) Improved signing in 1995.

* Data not applicable.



Exhibit 2.5

ALLWAY-STOP INTERSECTIONS WITH THE HIGHEST COLLISION RATE FROM 1994 TO 1998

INTERSECTION		RL (a)	RC (b)	RL/RC	AVG 3-YR AWDT (c)	NUMBER OF COLLISIONS					5-YR AVG.	COMMENT
		1994	1995	1996	1997	1998						
1	BIRGE & CHEEVER	1.30	3.36	0.39	1317	0	0	0	3	0	0.6	
2	CATHARINE & JACKSON	1.14	1.36	0.84	8754	*	*	*	3	4	3.5	(i)
3	HUGHSON & REBECCA	0.75	1.70	0.44	5061	*	*	2	2	0	1.3	(h)
4	HUGHSON ST & KING WILLIAM ST	0.72	2.09	0.34	3197	2	1	0	0	1	0.8	(f,g)
5	LIMERIDGE & U. KENILWORTH	0.62	1.53	0.40	6446	3	2	0	0	2	1.4	
6	ELMIRA/HORNING & HORNING	0.60	4.09	0.15	950	1	0	0	0	0	0.2	(e)
7	PARAMOUNT & U. MOUNT ALBION	0.59	1.31	0.45	9752	0	3	0	3	4	2.0	
8	LANDRON & U. KENILWORTH	0.53	2.08	0.25	3235	1	0	0	2	0	0.6	
9	DALEWOOD & STERLING	0.51	1.79	0.29	4488	1	0	0	3	0	0.8	
10	MOHAWK RD & U. KENILWORTH	0.48	1.39	0.35	8343	3	1	0	1	2	1.4	
11	HUCKLEBERRY & LAKE AVE	0.43	1.41	0.30	8000	2	1	1	1	1	1.2	
12	BEACH & ROWANWOOD	0.42	2.03	0.21	3396	*	0	0	2	0	0.5	
13	GREENHILL AVE & QUIGLEY RD	0.38	1.35	0.28	9057	3	0	1	1	1	1.2	
14	STONE CHURCH & U. SHERMAN	0.32	1.07	0.30	17944	2	*	*	*	*	2.0	(j)
15	FORSYTH AVE & KING ST	0.20	1.36	0.14	8772	2	0	1	0	0	0.6	
16	AIRPORT RD & HOMESTEAD DR	0.19	1.57	0.12	6094	0	2	0	0	0	0.4	
17	SANATORIUM RD & U. PARADISE	0.16	1.26	0.13	10817	1	0	1	1	0	0.6	
18	STONE CHURCH & PRITCHARD	0.02	0.98	0.02	24715	0	0	0	1	0	0.2	
19	BURLINGTON & JAMES	0.00	1.30	0.00	10027	0	0	0	0	0	0.0	
20	ALBRIGHT & MONTMORENCY	0.00	2.13	0.00	3078	0	0	0	0	0	0.0	

OVERALL STATISTICS FOR INTERSECTIONS: 0.52
(SEE NOTE (d))

1.1

NUMBER OF HAMILTON-WENTWORTH ALL-WAY STOP INTERSECTIONS WITH TRAFFIC VOLUME IN

1998 = 20



Notes:

- (a) RL is the number of collisions, per million vehicles entering the intersection, occurring within 31 feet of an individual intersection.
- (b) RC is a volume-adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the intersection in question is significantly higher than would normally be expected.

$$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$

Where: Ra = systemwide average collision rate for all all-way stop locations (0.520 collisions per million vehicle entries)
 K = constant (=1.65 for 95 % confidence level)
 m = vehicle exposure at the location in million vehicles entering per year (AWDTx340/1,000,000)

(c) AWDT - Average Weekday Daily Traffic (total vehicles entering the intersection).

(d) The averages shown are for those intersections in the database only. Volume information is not available for many minor

neighbourhood intersections, so only major all-way stop locations are included.

(e) Upper Horning closed at Freeway in 1995.

(f) Improved WB stop sign visibility in 1995.

(g) Converted to all way stop in 1993.

(h) Converted to all way stop in 1995.

(i) Converted to all way stop in April 1996.

(j) Converted to Traffic Signal in 1995.

* Data not applicable.

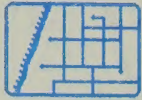


Exhibit 2.6

URBAN ROAD SECTIONS* WITH THE HIGHEST COLLISION RATES FROM 1994 TO 1998 SIGNALIZED INTERSECTIONS NOT INCLUDED

ARTERIAL STREET	From	To	Number of Collisions	RL	RC	Ratio	Link (Km)	Volume (AWDT)	Million Veh-Km/Yr
1 RYMAL	WEST 5TH	UPPER JAMES	62	6.74	2.93	2.30	0.350	15000	1.84
2 CHARLTON	JAMES	JOHN	24	6.67	4.17	1.60	0.244	8446	0.72
3 MAIN	KENILWORTH	BERRY	204	6.35	2.09	3.04	0.702	26342	6.46
4 BARTON	QUEEN	JAMES	65	5.73	2.74	2.09	0.872	7442	2.27
5 KING	WELLINGTON	WENTWORTH	168	5.43	2.11	2.57	0.866	20445	6.19
6 CHARLTON	QUEEN	JAMES	49	5.19	2.90	1.79	0.823	6571	1.89
7 BARTON	WELLINGTON	WENTWORTH	101	4.78	2.30	2.08	0.872	13874	4.23
8 MARKLAND	QUEEN	JAMES	8	4.21	5.62	0.75	0.823	1331	0.38
9 KING	CATHERINE	WELLINGTON	70	4.17	2.45	1.70	0.531	18108	3.36
10 CANNON	GAGE	OTTAWA	63	4.17	2.52	1.65	0.866	9985	3.02
11 BARTON	JAMES	WELLINGTON	69	4.16	2.45	1.70	0.836	11347	3.32
12 JAMES	MURRAY	BURLINGTON	38	4.09	2.92	1.40	0.890	5979	1.86
13 LIMERIDGE	DEAD END	UPPER SHERMAN	21	4.08	3.60	1.13	0.570	5191	1.03
14 BARTON	GAGE	OTTAWA	132	3.84	2.06	1.86	0.860	22862	6.87
15 LIMERIDGE	UPPER OTTAWA	MOUNTAIN BROW	43	3.84	2.75	1.40	1.280	5010	2.24
16 KING	PARADISE	NEWTON	73	3.81	2.25	1.69	0.781	14150	3.86
17 SHERMAN	MAIN	KING	28	3.78	3.15	1.20	0.427	9921	1.48
18 KENILWORTH	KENILWORTH ACCESS	MAIN	113	3.74	2.12	1.76	0.695	24865	6.04
19 QUEENSTON	BERRY	PARKDALE	124	3.70	2.07	1.79	0.884	21719	6.71
20 WENTWORTH	CHARLTON	DELEWARE	25	3.68	3.25	1.13	0.351	11090	1.36
21 KING	QUEEN	JAMES	139	3.57	2.01	1.78	0.860	25876	7.78
22 JOHN	ST. JOSEPH'S	KING N BRANCH	98	3.57	2.17	1.65	0.976	16102	5.49
23 BARTON	SHERMAN	GAGE	96	3.50	2.17	1.61	0.872	18017	5.49
24 JAMES	BARTON	MURRAY	6	3.43	5.86	0.59	0.120	8288	0.35
25 MAIN	KING	OTTAWA	65	3.38	2.75	1.23	0.366	30082	3.85

OVERALL STATISTICS FOR ALL URBAN ARTERIAL STREETS: 1.57

* URBAN ROAD SECTIONS ARE DEFINED AS THOSE HAVING CURB AND GUTTER.



Notes:

- (a) RL is the number of collisions, per million vehicles-km per year
- (b) RC is a volume-distance adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the location in question is significantly higher than would normally be expected.
- $$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$
- Where: Ra = systemwide average collision rate for all locations of the same category (1.57 collisions per million vehicle-km per year)
 K = constant (=1.65 for 95 % confidence level)
 m = vehicle exposure at the location in million vehicles-km per year (AWDTx340xLink/1,000,000)

(c) AWDT is Average Weekday Daily Traffic.

(d) Link is the road section distance in km.



Exhibit 2.7

URBAN ROAD SECTIONS* WITH THE HIGHEST COLLISION RATES FROM 1994 TO 1998 INTERSECTIONS NOT INCLUDED

ARTERIAL STREET	From	To	Number of Collisions	RL	RC	Ratio	Link (Km)	Volume (AWDT)	Million Veh-Km/Yr
1 RYMAL	WEST 5TH	UPPER JAMES	62	6.74	2.21	3.05	0.350	15000	1.84
2 KING	QUEEN	JAMES	139	3.57	1.43	2.50	0.860	25876	7.78
3 LIMERIDGE	DEAD END	UPPER SHERMAN	18	3.50	2.8	1.25	0.570	5191	1.03
4 KING	CATHERINE	WELLINGTON	53	3.15	1.80	1.75	0.531	18108	3.36
5 KING	WELLINGTON	WENTWORTH	95	3.07	1.51	2.03	0.866	20445	6.19
6 CHARLTON	JAMES	JOHN	11	3.06	3.29	0.93	0.244	8446	0.72
7 BRAMPTON	STRATHEARNE	PARKDALE	12	2.86	3.07	0.93	0.720	3355	0.84
8 MAIN	KENILWORTH	BERRY	89	2.76	1.50	1.84	0.702	26342	6.46
9 MOHAWK	UPPER PARADISE	GARTH	71	2.76	1.59	1.74	0.839	17571	5.15
10 BARTON	WELLINGTON	WENTWORTH	57	2.70	1.68	1.61	0.872	13874	4.23
11 MARKLAND	QUEEN	JAMES	5	2.63	4.58	0.57	0.823	1331	0.38
12 HWY 8 (SC)	DONN	GRAYS	49	2.59	1.73	1.50	0.450	24000	3.78
13 KENILWORTH	KENILWORTH ACCESS	MAIN	78	2.58	1.52	1.70	0.695	24865	6.04
14 BARTON	JAMES	WELLINGTON	42	2.53	1.80	1.41	0.836	11347	3.32
15 LIMERIDGE	UPPER WELLINGTON	DEAD END	11	2.50	3.00	0.83	0.774	3263	0.88
16 SANFORD	KING	BARTON	16	2.44	2.52	0.97	0.787	4775	1.31
17 QUEENSTON (SC)	REGIONAL LIMITS	DONN	157	2.39	1.28	1.87	1.500	25055	13.14
18 JAMES	ST. JOSEPH'S	KING N BRANCH	59	2.33	1.60	1.46	0.968	14948	5.06
19 DUNDURN	ABERDEEN	KING	53	2.30	1.64	1.40	1.308	10068	4.60
20 WILSON (A)	FIDDLER'S GREEN	MOHAWK	51	2.28	1.65	1.38	0.746	17118	4.48
21 MAIN	JAMES	WELLINGTON	99	2.27	1.40	1.62	0.866	28809	8.72
22 JAMES	KING N BRANCH	BARTON	39	2.25	1.78	1.26	0.860	11548	3.47
23 HWY 2 (A)	HWY53	HAMILTON DR.	75	2.24	1.48	1.51	2.400	8000	6.71
24 BARTON	WENTWORTH	SHERMAN	42	2.09	1.70	1.23	0.842	13637	4.01
25 QUEENSTON	BERRY	PARKDALE	69	2.06	1.48	1.39	0.884	21719	6.71
OVERALL STATISTICS FOR ALL URBAN ARTERIAL STREETS:									1.03

* URBAN ROAD SECTIONS ARE DEFINED AS THOSE HAVING CURB AND GUTTER.



Notes:

- (a) RL is the number of collisions, per million vehicles-km per year
- (b) RC is a volume-distance adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the location in question is significantly higher than would normally be expected.
- $$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$
- Where: Ra = systemwide average collision rate for all locations of the same category (1.57 collisions per million vehicle-km per year)
 K = constant (=1.65 for 95 % confidence level)
 m = vehicle exposure at the location in million vehicles-km per year (AWDTx340xLink/1,000,000)

(c) AWDT is Average Weekday Daily Traffic.

(d) Link is the road section distance in km.

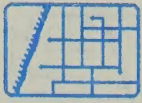


Exhibit 2.8

RURAL ROAD* SECTIONS WITH THE HIGHEST COLLISION RATES **FROM 1994 TO 1998** **SIGNALIZED INTERSECTIONS NOT INCLUDED**

ARTERIAL STREET	From	To	Number of Collisions	RL	RC	Ratio	Link (Km)	Volume (AWDT)	Million Veh-Km/Yr
1 SHEFFIELD	HWY 8	SAFARI	2	10.00	23.11	0.43	0.314	345	0.04
2 SHEFFIELD	5TH CON	HWY 8	5	7.69	7.69	0.75	0.825	447	0.13
3 RIDGE RD	HWY 20 S N OF HWY 53	NEW MOUNTAIN	15	6.12	4.97	1.23	2.426	577	0.49
4 WOODHILL	HWY 5	4TH CON	3	6.00	12.18	0.49	0.531	557	0.10
5 RIDGE	MC NEILY	REGIONAL LIMITS	7	5.83	7.17	0.81	0.552	1241	0.24
6 CARLUKE	FIDDLERS GREEN	GLANCASTER	22	4.94	3.82	1.29	1.067	2398	0.89
7 SHERMAN CUT	CROCKETT	SHERMAN ACCESS	81	4.63	2.42	1.91	0.362	27688	3.50
8 MUD	ARBOUR	PARAMOUNT	89	3.81	2.25	1.69	0.825	16207	4.67
9 SUNNYRIDGE	HWY 2	JERSEYVILLE	4	3.48	7.35	0.47	2.248	292	0.23
10 FIFTY	HWY 8	SOUTH SERVICE	17	3.15	3.54	0.89	0.797	3890	1.08
11 HWY 97	BROCK	HWY 6	8	3.14	4.87	0.64	0.474	3070	0.51
12 UPPER MOUNT ALBION	HWY 53	PARAMOUNT	7	2.98	5.07	0.59	1.172	1141	0.47
13 DICKENSON	MILES	NEBO	8	2.96	4.75	0.62	1.745	877	0.54
14 MILLGROVE	4TH CON	HWY 6	19	2.86	3.27	0.87	2.696	1416	1.33
15 CARLUKE	SHAVER	FIDDLER'S GREEN	25	2.76	2.94	0.94	2.475	2091	1.81
16 JERSEYVILLE	PADDY GREENE	MARTIN	13	2.63	3.66	0.72	1.856	1529	0.99
17 GLANCASTER	CARLUKE	AIRPORT	4	2.58	6.24	0.41	1.471	607	0.31
18 JERSEYVILLE	MARTIN	WILSON	34	2.55	2.61	0.98	2.147	3555	2.67
19 FIDDLER'S GREEN	CARLUKE	BUTTER	38	2.52	2.52	1.00	2.086	4147	3.02
20 MILLEN	BARTON	SOUTH SERVICE	19	2.50	3.12	0.80	1.039	4183	1.52
21 WILSON (A)	HAMILTON DR	FIDDLER'S GREEN	56	2.49	2.27	1.10	0.660	19490	4.50
22 UPPER PARADISE	RYMAL	STONE CHURCH	32	2.49	2.64	0.94	1.015	7255	2.57
23 UPPER WELLINGTON	RYMAL	STONE CHURCH	21	2.46	3.00	0.82	0.991	4941	1.71
24 GLOVER (SC)	HWY 8	SOUTH SERVICE	3	2.31	6.86	0.34	0.609	1216	0.26
25 FIDDLER'S GREEN	BUTTER	BOOK	51	2.27	2.27	1.00	2.041	6302	4.50
OVERALL STATISTICS FOR ALL MAJOR RURAL ROADS:									0.81

* RURAL ROAD SECTIONS ARE DEFINED AS THOSE WITH SHOULDERS AND DITCHES



Notes:

- (a) RL is the number of collisions, per million vehicles-km per year
- (b) RC is a volume-distance adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the location in question is significantly higher than would normally be expected.
- $$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$
- Where: Ra = systemwide average collision rate for all locations of the same category (1.03 collisions per million vehicle-km per year)
 K = constant (=1.65 for 95 % confidence level)
 m = vehicle exposure at the location in million vehicles-km per year (AWDTx340xLink/1,000,000)

(c) AWDT is Average Weekday Daily Traffic.

(d) Link is the road section distance in km.

Exhibit 2.9

STATIONS WITH THE HIGHEST COLLISION RATES FROM 1994 TO 1998 INTERSECTIONS NOT INCLUDED

ARTERIAL STREET	From	To	Number of Collisions	RL	RC	Ratio	Link (Km)	Volume (AWDT)	Million Veh-Km/Yr
1	SHEFFIELD (F)	5TH CON	5	7.69	8.84	0.87	0.825	447	0.13
2	WOODHILL	HWY 5	3	6.00	10.58	0.57	0.531	557	0.10
3	SHEFFIELD	HWY 8	1	5.00	20.85	0.24	0.314	345	0.04
4	RIDGE	MCNEILLY	5	4.17	5.98	0.70	0.552	1241	0.24
5	SUNNYRIDGE	HWY 2	4	3.48	6.14	0.57	2.248	292	0.23
6	SHERMAN CUT	CROCKETT	51	2.91	1.78	1.63	0.362	27688	3.50
7	RIDGE	HWY 20 S N OF 53	6	2.45	4.00	0.61	2.426	577	0.49
8	JERSEYVILLE	PADDY GREENE	12	2.42	2.85	0.85	1.856	1529	0.99
9	GLANCASTER	CARLUKE	3	1.94	5.14	0.38	1.471	607	0.31
10	MUD	ARBOUR	43	1.84	1.63	1.13	0.825	16207	4.67
11	UPPER PARADISE	RYMAL	23	1.79	1.96	0.91	1.015	7255	2.57
12	STONE CHURCH	UPPER JAMES	22	1.68	1.95	0.86	0.845	8882	2.62
13	UP J NB-EB ON RAMP	UPPER JAMES	2	1.67	5.98	0.28	0.350	2000	0.24
14	MUD	MOUNT ALBION	20	1.63	1.99	0.82	0.500	14000	2.45
15	FLETCHER	BINBROOK	4	1.63	4.00	0.41	2.084	667	0.49
16	HWY 53	HWY 2	48	1.59	1.52	1.05	3.450	5000	6.03
17	JERSEYVILLE	MARTIN	21	1.57	1.94	0.81	2.147	3555	2.67
18	GLOVER (SC)	HWY 8	2	1.54	5.70	0.27	0.609	1216	0.26
19	MOHAWK (A)	WILSON	37	1.52	1.61	0.94	0.816	17036	4.86
20	DICKENSON (G)	MILES	4	1.48	3.80	0.39	1.745	877	0.54
21	LAP-WB	MOH SB-WB ON RP	2	1.43	5.46	0.26	0.400	2000	0.28
22	WILSON (A)	HAMILTON DR	31	1.38	1.65	0.84	0.660	19490	4.50
23	TYNESIDE	REGIONAL LIMITS	6	1.33	2.97	0.45	2.873	897	0.90
24	STONE CHURCH	UPPER WELLINGTON	14	1.32	1.55	0.85	0.811	7472	2.12
25	HWY 97	FOREMAN	15	1.31	2.04	0.64	2.600	2520	2.29
			0.51						

OVERALL STATISTICS FOR ALL MAJOR RURAL ROADS:

*RURAL ROAD SECTIONS ARE DEFINED AS THOSE WITH SHOULDERS AND DITCHES



Notes:

- (a) RL is the number of collisions, per million vehicles-km per year
- (b) RC is a volume-distance adjusted critical rate. If RL exceeds RC (ie. RL/RC is greater than 1.0), one can state with 95 percent confidence that the collision rate at the location in question is significantly higher than would normally be expected.
- $$RC = Ra + K(\text{the square root of: } (Ra/m)) + (0.5/m)$$
- Where: Ra = systemwide average collision rate for all locations of the same category (1.03 collisions per million vehicle-km per year)
- K = constant (=1.65 for 95 % confidence level)
- m = vehicle exposure at the location in million vehicles-km per year (AWDTx340xLink/1,000,000)

(c) AWDT is Average Weekday Daily Traffic.

(d) Link is the road section distance in km.

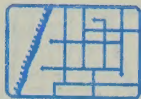


Exhibit 2.10

1998 COLLISION STATISTICS - SELECTED CANADIAN CITIES

CITY OR REGIONAL MUNICIPALITY CITIES	POPULATION	PROPERTY DAMAGE ONLY			COLLISION REPORTING CRITERIA (1)			TOTAL COLLISIONS	COLLISIONS /1,000		INJURY COLLISIONS /1,000	
		REPORTING LEVEL	(a)	(b)	(c)	(d)	Other		POPULATION	COLLISIONS	INJURY	POPULATION
HAMILTON	322,352	\$1,000.00	N	N	Y	Y	f	3,867	12.0		1,519	4.7
CALGARY (1997)	790,498	\$1,000.00	Y	Y	Y	Y	f	29,917	37.8		3,830	4.8
EDMONTON	636,100	\$1,000.00	N	N	N	Y		19,128	30.1		5,927	9.3
HALIFAX	330,000	\$1,000.00	Y	Y	Y	Y		3,980	12.1		800	2.4
LONDON	331,000	\$700.00	Y	Y	Y	Y		12,496	37.8		2,341	7.1
MONTREAL (1997)	1,017,000	\$500.00	N	N	N	Y	g	22,210	21.8		4,509	4.4
MISSISSAUGA (8)	605,000	\$1,000.00	N	N	N	Y		4,865	8.0		1,179	1.9
REGINA	187,500	\$1,000.00	N	N	N	Y	f	5,803	30.9		1,328(3)	7.1
SASKATOON	207,100	\$1,000.00	N	N	N	Y	f	7,388	35.7		1,075	5.2
METRO TORONTO (1995)	2,187,000	\$700.00	Y	Y	Y	Y	e, f	49,419	22.6		16,202 (3)	7.4
VANCOUVER (1997)	543,871	\$1,000.00	N	N	N	Y	f	6,048	11.1		2,850	5.2
WINDSOR	200,000	\$1,000.00	N	N	N	Y	e, f	4,799	24.0		1,079	5.4
WINNIPEG	635,000	\$1,000.00	Y	Y	Y	Y	e, f	17,487	27.5		5,392	8.5



CITY OR REGIONAL MUNICIPALITY REGIONS	POPULATION	PROPERTY DAMAGE ONLY				COLLISION CRITERIA (1)				TOTAL COLLISIONS	COLLISIONS /1,000 POPULATION	INJURY COLLISIONS /1,000 POPULATION		
		COLLISION REPORTING				LEVEL	(a)	(b)	(c)				(d)	Other
		REPORTING CRITERIA (1)												
REGIONAL HAMILTON- WENTWORTH (4)	467,799	\$1,000.00	N	N	Y	Y	Y	f	5,111	10.9	1,999	4.3		
REGION OF HALTON (6) (1996)	339,875	\$700.00	N	N	Y	Y	Y		5,257	15.5	912	2.7		
REGIONAL OTTAWA-CARLTON (1997)	721,090	\$700.00	N	N	N	Y	Y	e,f	12,496	17.3	2,962	4.1		
REGIONAL MUNICIPALITY OF PEEL (5) (1996)	852,526	\$700.00	Y	Y	Y	Y	Y	e,f	3,692	4.3	813	1.0		
REGIONAL WATERLOO (7) (1995)	419,150	\$700.00	Y	Y	Y	Y	Y	f	12,716	30.3	1,668	4.0		

(1) KEY TO CRITERIA FOR REPORTING COLLISIONS (See next page for definitions of injury collisions)

It is generally assumed, unless otherwise noted, that only collisions occurring on public roadways involving personal injury or property damage greater than the reporting level are included on this table.

- (a) Collisions reported involving an infraction of the Provincial Highway Traffic Act with property damage only and less than reporting level.
- (b) Collisions reported involving an infraction of the Criminal Code of Canada with property damage only and less than reporting level.
- (c) Hit and run collisions reported with property damage only and less than reporting level.
- (d) Collisions reported if it involves any personal injury.
- (e) Public property damage collisions.
- (f) Collisions involving City or Regional government vehicles.
- (g) "With the introduction of amicable constat by insurance companies in July, 1979, a great number of accidents with material damages are not reported and are out of control".

(2) Only injuries requiring medical attention were classified as injury collisions.

(3) Injury collisions do not include fatal collisions.

(4) Not including Kings Highways.

(5) Regional municipality statistics are for Regional roads only and do not include Burlington, in the case of Halton, or Mississauga, Brampton, or Caledon, in the case of Peel. Thus, the collision rates stated will substantially underrepresent the actual rates for all roads within that Regional municipality.

(6) Regional Municipality of Halton statistics are for Regional roads only, within Halton Region as provided by Halton Region Police.

(7) Regional Municipality of Waterloo statistics are for both Regional and area municipality roads. Injury collisions include fatal collisions.

(8) Data is for City roadways only, and does not include Regional roadways. Thus, the collision rates stated will underrepresent the overall rates.



DEFINITIONS OF "PERSONAL INJURY" (a)

Regional Hamilton-Wentworth	- any bodily harm, visible or complained of, that results from a motor vehicle collision.
City of Hamilton	- any bodily harm, visible or complained of, that results from a motor vehicle collision.
Calgary	- any type of injury resulting from a collision.
Edmonton	- including minor abrasions and bruises, complaint of pain, caused by a motor vehicle collision.
Halifax	- injury or death (no stipulation regarding severity of injury) caused by a motor vehicle collision.
London	- any type of injury, visible or complained of, caused by a collision; need not be treated at a hospital.
Mississauga	- N/A
Metro Toronto	- injury must be reported when an injury occurs to any of the involved persons in a collision.
Montreal	- any injury, apparent or not, to any person, caused directly or indirectly, by a motor vehicle.
Regina	- any bodily harm, visible or complaint of, caused by the accident.
Saskatoon	- any bodily harm, visible or complaint of, caused by the accident.
Vancouver	- N/A
Windsor	- any injury resulting from a motor vehicle collision.
Winnipeg	- readily identifiable injury or perceived injury caused by a collision.
Region of Halton	- any bodily harm, visible or complaint of, that results from a motor vehicle collision.
Regional Municipality of Peel	- any bodily harm, visible or complaint of, that results from a motor vehicle collision.
Regional Ottawa-Carleton	- injury is any bodily harm, visible or complained of, caused by a motor vehicle collision.
Region of Waterloo	- injury or death caused by a motor vehicle collision.

(a) Definitions of a "personal injury" such that a collision involving a personal injury must be reported

HAMILTON PUBLIC LIBRARY



3 2022 21335321 8